



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,667	01/16/2002	Hieronymus Andriessen	27500-73	6035

7590 12/11/2002

Joseph T. Guy Ph.D.
Nexsen Pruet Jacobs & Pollard LLP
201 W. McBee Avenue
Greenville, SC 29603

[REDACTED] EXAMINER

LE, THAO X

[REDACTED] ART UNIT [REDACTED] PAPER NUMBER

2814

DATE MAILED: 12/11/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/050,667	ANDRIESSEN, HIERONYMUS	
	Examiner Thao X Le	Art Unit 2814	
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i>			
Period for Reply			
A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.			
<ul style="list-style-type: none"> - Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication. - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely. - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication. - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). - Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b). 			
Status			
<p>1)<input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>15 May 2002</u>.</p> <p>2a)<input type="checkbox"/> This action is FINAL. 2b)<input checked="" type="checkbox"/> This action is non-final.</p> <p>3)<input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i>, 1935 C.D. 11, 453 O.G. 213.</p>			
Disposition of Claims			
<p>4)<input checked="" type="checkbox"/> Claim(s) <u>1-14</u> is/are pending in the application.</p> <p>4a) Of the above claim(s) _____ is/are withdrawn from consideration.</p> <p>5)<input type="checkbox"/> Claim(s) _____ is/are allowed.</p> <p>6)<input checked="" type="checkbox"/> Claim(s) <u>1-14</u> is/are rejected.</p> <p>7)<input type="checkbox"/> Claim(s) _____ is/are objected to.</p> <p>8)<input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.</p>			
Application Papers			
<p>9)<input checked="" type="checkbox"/> The specification is objected to by the Examiner.</p> <p>10)<input type="checkbox"/> The drawing(s) filed on _____ is/are: a)<input type="checkbox"/> accepted or b)<input type="checkbox"/> objected to by the Examiner.</p> <p style="margin-left: 20px;">Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).</p> <p>11)<input type="checkbox"/> The proposed drawing correction filed on _____ is: a)<input type="checkbox"/> approved b)<input type="checkbox"/> disapproved by the Examiner.</p> <p style="margin-left: 20px;">If approved, corrected drawings are required in reply to this Office action.</p> <p>12)<input type="checkbox"/> The oath or declaration is objected to by the Examiner.</p>			
Priority under 35 U.S.C. §§ 119 and 120			
<p>13)<input checked="" type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).</p> <p>a)<input checked="" type="checkbox"/> All b)<input type="checkbox"/> Some * c)<input type="checkbox"/> None of:</p> <p>1.<input checked="" type="checkbox"/> Certified copies of the priority documents have been received.</p> <p>2.<input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____.</p> <p>3.<input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).</p> <p>* See the attached detailed Office action for a list of the certified copies not received.</p> <p>14)<input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).</p> <p>a)<input type="checkbox"/> The translation of the foreign language provisional application has been received.</p> <p>15)<input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.</p>			
Attachment(s)			
<p>1)<input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2)<input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3)<input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u>.</p>		<p>4)<input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____</p> <p>5)<input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6)<input type="checkbox"/> Other: _____</p>	

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because the abstract should have separate page following the claims. Correction is required. See MPEP § 608.01(b).
2. The disclosure is objected to because of the following informalities: ‘M ethod’ page 9 line 30 should be corrected.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
4. Claims 7-8, recite the limitation ‘and/or’ are unclear. Claims 5 are rejected for at least for depending on rejected claim 6.

Double Patenting

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686

F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claims 1-14 provisionally rejected under the judicially created doctrine of double patenting over claims 1-13 of co-pending Application No. 10/054243. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced co-pending application and would be covered by any patent granted on that co-pending application since the referenced co-pending application and the instant application are claiming common subject matter, as follows:

- Both applications claim the inorganic light emitting diode comprising first conductive electrode, a p-type semiconductive polymer on the first conductive electrode, a doped nanoparticle dispersion ZnS doped with Mn luminescent on the p-type semiconductive polymer and second conductive electrode on the a doped nanoparticle dispersion ZnS, wherein at least one of the first and second conductive electrode is transparent.

Moreover, the claims in the instant application are narrower version of the claim in the

co-pending application or are obvious variation thereof, see claim 1 of the instant application and claim 1 of co-pending application, that shows no different meaning of between these elements and the claims of the co-pending application have claimed the same goal and are not distinguishable from each other.

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other co-pending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

7. Claims 1-3, 6-8, 10-14 provisionally rejected under the judicially created doctrine of double patenting over claims 1, 4, 6-8, 10-11 of co-pending Application No. 10/054,014. This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced co-pending application and would be covered by any patent granted on that co-pending application since the referenced co-pending application and the instant application are claiming common subject matter, as follows:

- Both applications claim the inorganic light emitting diode comprising first conductive electrode, a p-type semiconductive polymer on the first conductive electrode, a doped nanoparticle dispersion ZnS doped with Mn luminescent on the p-type semiconductive polymer and second conductive electrode on the a doped nanoparticle dispersion ZnS.

Moreover, the claims in the instant application are narrower version of the claim in the co-pending application or are obvious variation thereof, for example the co-pending application claims, in claims 1 and 8, a process for making a nanoparticle dispersion of

ZnS doped with Mn, then applies ZnS doped compound in the thin inorganic LED, shows no different meaning of between these elements and the claims of the pending application have claimed the same goal and are not distinguishable from each other

Furthermore, there is no apparent reason why applicant would be prevented from presenting claims corresponding to those of the instant application in the other co-pending application. See *In re Schneller*, 397 F.2d 350, 158 USPQ 210 (CCPA 1968). See also MPEP § 804.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. ²⁻¹⁴ Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over US PUB 2002/0110701 to Wehrmann et al. in view of US 6379583 to Gray et al.

Regarding to claim 1, Wehrmann discloses a method for manufacturing a thin film inorganic light emitting diode device (TFILED), see abstract and claim 1, comprising the following steps: preparing a nanoparticle dispersion of ZnS (electroluminescent zone) [0062], coating on top of first conductive electrode (anode) [0075] with ZnS, applying a second conductive electrode (cathode), with the proviso that at least one of first and second conductive electrode is transparent [0076].

But Wehrmann does not expressly disclose ZnS doped with a luminescent center by precipitation from appropriate aqueous solution comprising zinc ions, sulfide ions and dopant ions, washing dispersion of doped ZnS to remove non-precipitated ions.

However, Gray reference discloses ZnS doped with a luminescent center by precipitation from appropriate aqueous solution comprising zinc ions, sulfide ions and dopant ions, washing dispersion of doped ZnS to remove non-precipitated ions, fig. 1, column 4 lines 57-60, column 5 line 24-30. At the time the invention was made; it would have been obvious to one of ordinary skill in the art to use the doped ZnS teaching of Gray with Wehrmann, because it would have prevent the agglomeration, achieved high purity and improved the photoluminescence as taught by Gray, column 4 line 57-59, column 5 line 15 and Example 1 and 4.

Regarding to claims 2-8, Wehrmann does not expressly disclose the precipitation is formed according to the double jet principle whereby a first solution containing Zinc ions and a second solution containing sulfide ions are added together to a third solution, wherein the first solution also contain dopant ions, wherein the dopant ions are Cu manganese dopant ions and dopant ions are Cu^{2+} , Cu^1 and Mn^{2+} and wherein washing dispersion of doped ZnS is performed by ultrafiltration in the presence of polyphosphate or polyphosphoric acid compound to preventing agglomeration of nanoparticles.

However, Gary reference discloses the precipitation is formed in aqueous phase, column 4 line 1-7, and solution contains manganese dopant ions and dopant ions are copper (I) or copper (II) ions, column 5 lines 25-40, to preventing agglomeration, column 5 line 59. At the time the invention was made; it would have been obvious to one of

ordinary skill in the art to combine dopant ions teaching of Gray with Wehrmann, because it would have created a stable nanoparticle and increased the band-gap (photoluminescence) as taught by Gray, column 5 line 55-65, column 7 line 6.

With respect to double jet principle, ultrafiltration in the presence of polyphosphate or polyphosphoric acid compound, Gray discloses the general procedure to obtain doped ZnS including isolation, fig. 1, and the washing with antiagglomeration agents including hydrophilic or hydrophobic. The isolation obviously comprises filtration or ultrafiltration that is standard wet chemistry procedure. Accordingly, it would have been obvious to use teaching of Gray as claimed, because it has been held that where the general conditions of the claims are disclosed in the prior art, it is not inventive to discover the optimum or workable range by routine experimentation. See *In re Aller*, 220 F.2d 454, 105 USPQ 233, 235 (CCPA 1955). Also, such double-jet precipitation and ultrafiltration are well known chemical processes being described in various publications, for example, US 525248 to Nishio et al column 9 line 33-36 ~~and~~ and in [0125] of US Pub. 2001/0039060 to Siiman et al, while both double jet precipitation and ultrafiltration is disclosed in column 6 lines 28-35 and column 12 lines 52-60 of US 5073303 to Reid.

Regarding to claims 10, 13 Wehrmann discloses the first electrode is an ITO electrode [0076], and second conductive electrode is an aluminum electrode applied by vacuum deposition [0089].

Regarding to claims 11-12, Wehrmann discloses the first electrode is a foil comprising polythiophene [0050]/polyanion complex [0053] or polyethylenedioxythiophene [0097]/polyester sulphonate [0048]

Regarding to claim 14, as discussed in the above claim 1, Wehrmann and Gray disclose a TFILED in claim 14.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thao X Le whose telephone number is 703-306-0208. The examiner can normally be reached on M-F from 8:00 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M Fahmy can be reached on 703-308-4918. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Thao X. Le
December 9, 2002



PHAT X. CAO
PRIMARY EXAMINER